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Thr 145	Phe	Gly	Ser	Arg	Val 150	Arg	Val	Arg	Gly	Ala 155	Glu	Thr	Gly	Leu	Tyr 160
Ile	Cys	Met	Asn	Lys 165	Lys	Gly	Lys	Leu	Ile 170	Ala	Lys	Ser	Asn	Gly 175	Lys
Gly	Lys	Asp	Cys 180	Val	Phe	Thr	Glu	Ile 185	Val	Leu	Glu	Asn	Asn 190	Tyr	Thr
Ala	Leu 195	Gln	Asn	Ala	Lys	Tyr	Glu 200	Gly	Trp	Tyr	Met	Ala 205	Phe	Thr	Arg
Lys	Gly 210	Arg	Pro	Arg	Lys	Gly 215	Ser	Lys	Thr	Arg	Gln 220	His	Gln	Arg	Glu
Val 225	His	Phe	Met	Lys	Arg 230	Leu	Pro	Arg	Gly	His 235	His	Thr	Thr	Glu	Gln 240
Ser	Leu	Arg	Phe	Glu 245	Phe	Leu	Asn	Tyr	Pro 250	Pro	Phe	Thr	Arg	Ser 255	Leu
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<210> 23
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<212> DNA
<213> Homo sapiens
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<222> (593)..(1216)
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Met Trp
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aaa tgg ata ctg aca cat tgt gcc tca gcc ttt ccc cac ctg ccc ggc 646
Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu Pro Gly
5 10 15

-14-

tgc tgc tgc tgc tgc ttt ttg ttg ctg ttc ttg gtg tct tcc gtc cct	694
Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser Val Pro	
20 25 30	
gtc acc tgc caa gcc ctt ggt cag gac atg gtg tca cca gag gcc acc	742
Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr	
35 40 45 50	
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Asn Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His	
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gtg cgg agc tac aat cac ctt caa gga gat gtc cgc tgg aga aag cta	838
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu	
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Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val	
85 90 95	
agc ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca	934
Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr	
100 105 110	
tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat	982
Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr	
115 120 125 130	
tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt	1030
Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe	
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Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn	
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acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg tat gtg	1126
Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val	
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gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca cga agg	1174
Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg	
180 185 190	
aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca	1216
Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser	
195 200 205	
tagaggaagg caacgtttgt ggatgcagta aaaccaatgg ctcttttgcc aagaatagt	1276
gatattcttc atgaagacag tagattgaaa ggcaaagaca cgttgcagat gtctgcttgc	1336
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<210> 24
 <211> 208
 <212> PRT
 <213> Homo sapiens

<400> 24
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 1 5 10 15
 Pro Gly Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
 20 25 30
 Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
 35 40 45
 Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly
 50 55 60
 Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
 65 70 75 80
 Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
 85 90 95
 Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
 100 105 110
 Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
 115 120 125
 Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
 130 135 140
 Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
 145 150 155 160
 Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met

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	165		170		175
Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr					
	180		185		190
Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser					
	195		200		205

<210> 25
 <211> 31
 <212> PRT
 <213> Homo sapiens

<400> 25
 Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser Ser Ser Ser
 1 5 10 15
 Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser Tyr Asn
 20 25 30

<210> 26
 <211> 19
 <212> PRT
 <213> Homo sapiens

<400> 26
 Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys
 1 5 10 15
 Pro Tyr Ser

<210> 27
 <211> 30
 <212> PRT
 <213> Homo sapiens

<400> 27
 Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys
 1 5 10 15
 Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr
 20 25 30

<210> 28
 <211> 19
 <212> PRT
 <213> Homo sapiens

<400> 28
 Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn
 1 5 10 15
 Thr Ser Ala

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<210> 29
 <211> 555
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> CDS
 <222> (1)..(552)

<220>
 <223> Description of Artificial Sequence: pQE60-Cys37
 construct

<400> 29
 atg aga gga tcg cat cac cat cac cat cac gga tcc tgc cag gct ctg 48
 Met Arg Gly Ser His His His His His Gly Ser Cys Gln Ala Leu
 1 5 10 15
 ggt cag gac atg gtt tct ccg gaa gct acc aac tct tcc tct tcc tct 96
 Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser Ser Ser Ser
 20 25 30
 ttc tct tcc ccg tct tcc gct ggt cgt cac gtt cgt tct tac aac cac 144
 Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser Tyr Asn His
 35 40 45
 ctg cag ggt gac gtt cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac 192
 Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr
 50 55 60
 ttc ctg aaa atc gaa aaa aac ggt aaa gtt tct ggg acc aag aag gag 240
 Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu
 65 70 75 80
 aac tgc ccg tac agc atc ctg gag ata aca tca gta gaa atc gga gtt 288
 Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val
 85 90 95
 gtt gcc gtc aaa gcc att aac agc aac tat tac tta gcc atg aac aag 336
 Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys
 100 105 110
 aag ggg aaa ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg 384
 Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 115 120 125
 aag gag agg ata gag gaa aat gga tac aat acc tat gca tca ttt aac 432
 Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 130 135 140
 tgg cag cat aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga 480
 Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 145 150 155 160
 gct cca agg aga gga cag aaa aca cga agg aaa aac acc tct gct cac 528
 Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 165 170 175
 ttt ctt cca atg gtg gta cac tca tag 555
 Phe Leu Pro Met Val Val His Ser
 180

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<210> 30
 <211> 184
 <212> PRT
 <213> Artificial Sequence
 <223> Description of Artificial Sequence: pQE60-Cys37
 construct

<400> 30
 Met Arg Gly Ser His His His His His Gly Ser Cys Gln Ala Leu
 1 5 10 15
 Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser Ser Ser
 20 25 30
 Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser Tyr Asn His
 35 40 45
 Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr
 50 55 60
 Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu
 65 70 75 80
 Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val
 85 90 95
 Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys
 100 105 110
 Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 115 120 125
 Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 130 135 140
 Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 145 150 155 160
 Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 165 170 175
 Phe Leu Pro Met Val Val His Ser
 180

<210> 31
 <211> 84
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic
 primer

<400> 31
 atgtggaat ggatactgac ccaactgcgct tctgctttcc cgcacctgcc gggttgctgc 60
 tgctgctgct tctgctgct gttc 84

<210> 32
 <211> 82

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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 32

ccggagaaac catgtcctga cccagagcct ggcaggtaac cggaacagaa gaaaccagga 60
acagcagcag gaagcagcag ca 82

<210> 33

<211> 80

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 33

gggtcaggac atggtttctc cggaagctac caacttttct tctttttctt tcttttctcc 60
gtcttctgct ggctgtcacg 80

<210> 34

<211> 81

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 34

ggtgaaagag aacagtttac gccaacgaac gtcaccctgc aggtggttgt aagaacgaac 60
gtgacgacca gcagaagacg g 81

<210> 35

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 35

cgttggcgta aactgttctc tttcaccaaa tacttcctga aaatcgaaaa aaacggtaaa 60
gtttctggga ccaaa 75

<210> 36

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

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<400> 36
 tttggtccca gaaactttac cgtttttttc gattttcag 39

<210> 37
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic
 primer

<400> 37
 aaaggatcca tgtggaaatg gatactgacc cactgc 36

<210> 38
 <211> 627
 <212> DNA
 <213> Escherichia coli

<220>
 <221> CDS
 <222> (1)..(627)

<400> 38
 atg tgg aaa tgg ata ctg acc cac tgc gct tct gct ttc ccg cac ctg 48
 Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu
 1 5 10 15

ccg ggt tgc tgc tgc tgc tgc ttc ctg ctg ctg ttc ctg gtt tct tct 96
 Pro Gly Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
 20 25 30

gtt ccg gtt acc tgc cag gct ctg ggt cag gac atg gtt tct ccg gaa 144
 Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
 35 40 45

gct acc aac tct tcc tct tcc tct ttc tct tcc ccg act tcc gct ggt 192
 Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Thr Ser Ala Gly
 50 55 60

cgt cac gtt cgt tct tac aac cac ctg cag ggt gac gtt cgt tgg cgt 240
 Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
 65 70 75 80

aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa atc gaa aaa aac ggt 288
 Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
 85 90 95

aaa gtt tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag 336
 Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
 100 105 110

ata aca tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc 384
 Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
 115 120 125

aac tat tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa 432
 Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
 130 135 140

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gaa ttt aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga 480
 Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
 145 150 155 160
 tac aat acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg 528
 Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met
 165 170 175
 tat gtg gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca 576
 Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr
 180 185 190
 cga agg aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca 624
 Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 195 200 205
 tag 627

<210> 39
 <211> 208
 <212> PRT
 <213> Escherichia coli

<400> 39
 Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu
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 Pro Gly Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
 20 25 30
 Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
 35 40 45
 Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Thr Ser Ala Gly
 50 55 60
 Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
 65 70 75 80
 Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
 85 90 95
 Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
 100 105 110
 Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
 115 120 125
 Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
 130 135 140
 Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
 145 150 155 160
 Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met
 165 170 175
 Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr
 180 185 190
 Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 195 200 205

<210> 40
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

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<400> 40
 tttcatgact tgtcaagctc tgggtcaaga tatggttc 38

<210> 41
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 41
 gcccaagctt ccacaaacgt tgccttcc 28

<210> 42
 <211> 525
 <212> DNA
 <213> Escherichia coli

<220>
 <221> CDS
 <222> (1)..(522)

<400> 42
 atg acc tgc cag gct ctg ggt cag gac atg gtt tct ccg gaa gct acc 48
 Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
 1 5 10 15

aac tct tcc tct tcc tct ttc tct tcc ccg tct tcc gct ggt cgt cac 96
 Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
 20 25 30

gtt cgt tct tac aac cac ctg cag ggt gac gtt cgt tgg cgt aaa ctg 144
 Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
 35 40 45

ttc tct ttc acc aaa tac ttc ctg aaa atc gaa aaa aac ggt aaa gtt 192
 Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60

tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca 240
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80

tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat 288
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95

tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt 336
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110

aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga tac aat 384
 Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125

acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg tat gtg 432
 Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140

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gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca cga agg 480
 Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160

aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca tag 525
 Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 43

<211> 174

<212> PRT

<213> Escherichia coli

<400> 43

Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
 1 5 10 15

Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
 20 25 30

Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
 35 40 45

Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60

Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80

Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95

Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110

Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125

Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140

Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160

Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 44

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
 primer

<400> 44

tcagtgaatt cattaaagag gagaaattaa tcatgacttg ccagg

45

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<210> 45
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 45
tcatgacttg ccaggcactg ggtcaagaca tggtttcccc ggaagcta

48

<210> 46
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 46
gcttcagcag cccatctagc gcaggtcgtc acgttcgctc ttacaacc

48

<210> 47
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 47
gttcgttggc gcaaactggt cagctttacc aagtacttcc tgaaaatc

48

<210> 48
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 48
tcgaaaaaaaa cggtaaagtt tctgggac

28

<210> 49
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 49

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gatgggctgc tgaagctaga gctggagctg ttggtagctt ccggggaa

48

<210> 50

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 50

aacagtttgc gccaacgaac atcaccctgt aagtggttgt aagag

45

<210> 51

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 51

ttcttgggtcc cagaaacttt accgtttttt tcgattttca ggaagta

47

<210> 52

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 52

ttcttgggtcc cagaaacttt accg

24

<210> 53

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 53

agatcaggct tctattatta tgagtgtacc accattggaa gaaag

45

<210> 54

<211> 525

<212> DNA

<213> Escherichia coli

<220>

<221> CDS

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<222> (1)..(522)

<400> 54

atg act tgc cag gca ctg ggt caa gac atg gtt tcc ccg gaa gct acc	48
Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr	
1 5 10 15	
aac agc tcc agc tct agc ttc agc agc cca tct agc gca ggt cgt cac	96
Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His	
20 25 30	
gtt cgc tct tac aac cac tta cag ggt gat gtt cgt tgg cgc aaa ctg	144
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu	
35 40 45	
ttc agc ttt acc aag tac ttc ctg aaa atc gaa aaa aac ggt aaa gtt	192
Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val	
50 55 60	
tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca	240
Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr	
65 70 75 80	
tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat	288
Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr	
85 90 95	
tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt	336
Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe	
100 105 110	
aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga tac aat	384
Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn	
115 120 125	
acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg tat gtg	432
Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val	
130 135 140	
gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca cga agg	480
Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg	
145 150 155 160	
aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca tag	525
Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser	
165 170	

<210> 55

<211> 174

<212> PRT

<213> Escherichia coli

<400> 55

Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr	
1 5 10 15	
Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His	
20 25 30	
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu	
35 40 45	

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Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110
 Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125
 Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140
 Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160
 Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 56

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 56

ggacctcat gacctgccag gctctgggtc aggac

35

<210> 57

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 57

ggacagccat ggctggtcgt cacgttcg

28

<210> 58

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 58

ggacagccat ggctcggttg cgtaaactg

29

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<210> 59
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 59
ggacagccat ggaaaaaac ggtaaagttt c 31

<210> 60
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 60
ggaccccat ggagaactgc ccgtagagc 29

<210> 61
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 61
ggaccccat ggtcaaagcc attaacagca ac 32

<210> 62
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 62
ggaccccat ggggaaactc tatggctcaa aag 33

<210> 63
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 63
ctgccaagc ttattatgag tgtaccacca ttggaag 37

<210> 64
<211> 36

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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 64

ctgcccaagc ttattacttc agcttacagt cattgt

36

<210> 65

<211> 525

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(522)

<400> 65

atg	acc	tgc	cag	gct	ctg	ggt	cag	gac	atg	ggt	tct	ccg	gaa	gct	acc	48
Met	Thr	Cys	Gln	Ala	Leu	Gly	Gln	Asp	Met	Val	Ser	Pro	Glu	Ala	Thr	
1				5					10					15		

aac	tct	tcc	tct	tcc	tct	ttc	tct	tcc	ccg	tct	tcc	gct	ggt	cgt	cac	96
Asn	Ser	Ser	Ser	Ser	Ser	Phe	Ser	Ser	Pro	Ser	Ser	Ala	Gly	Arg	His	
			20					25					30			

ggt	cgt	tct	tac	aac	cac	ctg	cag	ggt	gac	ggt	cgt	tgg	cgt	aaa	ctg	144
Val	Arg	Ser	Tyr	Asn	His	Leu	Gln	Gly	Asp	Val	Arg	Trp	Arg	Lys	Leu	
		35				40						45				

ttc	tct	ttc	acc	aaa	tac	ttc	ctg	aaa	atc	gaa	aaa	aac	ggt	aaa	ggt	192
Phe	Ser	Phe	Thr	Lys	Tyr	Phe	Leu	Lys	Ile	Glu	Lys	Asn	Gly	Lys	Val	
	50					55					60					

tct	ggg	acc	aag	aag	gag	aac	tgc	ccg	tac	agc	atc	ctg	gag	ata	aca	240
Ser	Gly	Thr	Lys	Lys	Glu	Asn	Cys	Pro	Tyr	Ser	Ile	Leu	Glu	Ile	Thr	
65					70					75				80		

tca	gta	gaa	atc	gga	ggt	ggt	gcc	gtc	aaa	gcc	att	aac	agc	aac	tat	288
Ser	Val	Glu	Ile	Gly	Val	Val	Ala	Val	Lys	Ala	Ile	Asn	Ser	Asn	Tyr	
			85						90					95		

tac	tta	gcc	atg	aac	aag	aag	ggg	aaa	ctc	tat	ggc	tca	aaa	gaa	ttt	336
Tyr	Leu	Ala	Met	Asn	Lys	Lys	Gly	Lys	Leu	Tyr	Gly	Ser	Lys	Glu	Phe	
		100						105					110			

aac	aat	gac	tgt	aag	ctg	aag	gag	agg	ata	gag	gaa	aat	gga	tac	aat	384
Asn	Asn	Asp	Cys	Lys	Leu	Lys	Glu	Arg	Ile	Glu	Glu	Asn	Gly	Tyr	Asn	
		115					120					125				

acc	tat	gca	tca	ttt	aac	tgg	cag	cat	aat	ggg	agg	caa	atg	tat	gtg	432
Thr	Tyr	Ala	Ser	Phe	Asn	Trp	Gln	His	Asn	Gly	Arg	Gln	Met	Tyr	Val	
	130					135					140					

gca	ttg	aat	gga	aaa	gga	gct	cca	agg	aga	gga	cag	aaa	aca	cga	agg	480
Ala	Leu	Asn	Gly	Lys	Gly	Ala	Pro	Arg	Arg	Gly	Gln	Lys	Thr	Arg	Arg	
145					150					155				160		

aaa	aac	acc	tct	gct	cac	ttt	ctt	cca	atg	gtg	gta	cac	tca	tag		525
Lys	Asn	Thr	Ser	Ala	His	Phe	Leu	Pro	Met	Val	Val	His	Ser			

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165

170

<210> 66
 <211> 174
 <212> PRT
 <213> Homo sapiens

<400> 66
 Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
 1 5 10 15
 Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
 20 25 30
 Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
 35 40 45
 Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110
 Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125
 Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140
 Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160
 Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 67
 <211> 444
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(444)

<400> 67
 atg gct ggt cgt cac gtt cgt tct tac aac cac ctg cag ggt gac gtt 48
 Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1 5 10 15
 cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa atc gaa 96
 Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu
 20 25 30

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aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg tac agc 144
Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser
      35              40              45

atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc aaa gcc 192
Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala
      50              55              60

att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa ctc tat 240
Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr
      65              70              75

ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag gag agg ata gag 288
Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu
      85              90              95

gaa aat gga tac aat acc tat gca tca ttt aac tgg cag cat aat ggg 336
Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly
      100             105             110

agg caa atg tat gtg gca ttg aat gga aaa gga gct cca agg aga gga 384
Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly
      115             120             125

cag aaa aca cga agg aaa aac acc tct gct cac ttt ctt cca atg gtg 432
Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val
      130             135             140

gta cac tca tag
Val His Ser
145

```

<210> 68

<211> 147

<212> PRT

<213> Homo sapiens

<400> 68

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Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1      5      10      15
Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu
      20      25      30
Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser
      35      40      45
Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala
      50      55      60
Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr
      65      70      75
Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu
      85      90      95
Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly
      100     105     110
Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly
      115     120     125
Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val
      130     135     140
Val His Ser
145

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<210> 69
 <211> 402
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(402)

<400> 69
 atg gtt cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa 48
 Met Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys
 1 5 10 15
 atc gaa aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg 96
 Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro
 20 25 30
 tac agc atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc 144
 Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val
 35 40 45
 aaa gcc att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa 192
 Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys
 50 55 60
 ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag gag agg 240
 Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg
 65 70 75 80
 ata gag gaa aat gga tac aat acc tat gca tca ttt aac tgg cag cat 288
 Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His
 85 90 95
 aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga gct cca agg 336
 Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg
 100 105 110
 aga gga cag aaa aca cga agg aaa aac acc tct gct cac ttt ctt cca 384
 Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro
 115 120 125
 atg gtg gta cac tca tag 402
 Met Val Val His Ser
 130

<210> 70
 <211> 133
 <212> PRT
 <213> Homo sapiens

<400> 70
 Met Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys
 1 5 10 15
 Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro
 20 25 30
 Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val
 35 40 45
 Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys
 50 55 60
 Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg

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65		70		75		80									
Ile	Glu	Glu	Asn	Gly	Tyr	Asn	Thr	Tyr	Ala	Ser	Phe	Asn	Trp	Gln	His
			85						90					95	
Asn	Gly	Arg	Gln	Met	Tyr	Val	Ala	Leu	Asn	Gly	Lys	Gly	Ala	Pro	Arg
		100						105					110		
Arg	Gly	Gln	Lys	Thr	Arg	Arg	Lys	Asn	Thr	Ser	Ala	His	Phe	Leu	Pro
	115						120					125			
Met	Val	Val	His	Ser											
130															

<210> 71
 <211> 354
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(354)

<400> 71
 atg gaa aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg 48
 Met Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro
 1 5 10 15
 tac agc atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc 96
 Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val
 20 25 30
 aaa gcc att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa 144
 Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys
 35 40 45
 ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag gag agg 192
 Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg
 50 55 60
 ata gag gaa aat gga tac aat acc tat gca tca ttt aac tgg cag cat 240
 Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His
 65 70 75 80
 aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga gct cca agg 288
 Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg
 85 90 95
 aga gga cag aaa aca cga agg aaa aac acc tct gct cac ttt ctt cca 336
 Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro
 100 105 110
 atg gtg gta cac tca tag 354
 Met Val Val His Ser
 115

<210> 72
 <211> 117
 <212> PRT
 <213> Homo sapiens

<400> 72
 Met Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro

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1	5	10	15
Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val			
	20	25	30
Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys			
	35	40	45
Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg			
	50	55	60
Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His			
	65	70	75
Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg			
	85	90	95
Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro			
	100	105	110
Met Val Val His Ser			
	115		

<210> 73
 <211> 321
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(321)

<400> 73	
atg gag aac tgc ccg tac agc atc ctg gag ata aca tca gta gaa atc	48
Met Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile	
1 5 10 15	
gga gtt gtt gcc gtc aaa gcc att aac agc aac tat tac tta gcc atg	96
Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met	
20 25 30	
aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt aac aat gac tgt	144
Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys	
35 40 45	
aag ctg aag gag agg ata gag gaa aat gga tac aat acc tat gca tca	192
Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser	
50 55 60	
ttt aac tgg cag cat aat ggg agg caa atg tat gtg gca ttg aat gga	240
Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly	
65 70 75 80	
aaa gga gct cca agg aga gga cag aaa aca cga agg aaa aac acc tct	288
Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser	
85 90 95	
gct cac ttt ctt cca atg gtg gta cac tca tag	321
Ala His Phe Leu Pro Met Val Val His Ser	
100 105	

<210> 74
 <211> 106
 <212> PRT
 <213> Homo sapiens

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<400> 74

```

Met Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile
 1          5          10          15
Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met
          20          25          30
Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys
          35          40          45
Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser
          50          55          60
Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly
 65          70          75          80
Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser
          85          90          95
Ala His Phe Leu Pro Met Val Val His Ser
          100          105

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<210> 75

<211> 264

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(261)

<400> 75

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atg gtc aaa gcc att aac agc aac tat tac tta gcc atg aac aag aag 48
Met Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys
 1          5          10          15

ggg aaa ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag 96
Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys
          20          25          30

gag agg ata gag gaa aat gga tac aat acc tat gca tca ttt aac tgg 144
Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp
          35          40          45

cag cat aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga gct 192
Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala
          50          55          60

cca agg aga gga cag aaa aca cga agg aaa aac acc tct gct cac ttt 240
Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe
 65          70          75          80

ctt cca atg gtg gta cac tca tag 264
Leu Pro Met Val Val His Ser
          85

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<210> 76

<211> 87

<212> PRT

<213> Homo sapiens

<400> 76

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Met Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys
 1          5          10          15

```


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Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys
 20 25 30

Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp
 35 40 45

Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala
 50 55 60

Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe
 65 70 75 80

Leu Pro Met Val Val His Ser
 85

<210> 77
 <211> 219
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(219)

<400> 77
 atg ggg aaa ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg 48
 Met Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 1 5 10 15

aag gag agg ata gag gaa aat gga tac aat acc tat gca tca ttt aac 96
 Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 20 25 30

tgg cag cat aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga 144
 Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 35 40 45

gct cca agg aga gga cag aaa aca cga agg aaa aac acc tct gct cac 192
 Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 50 55 60

ttt ctt cca atg gtg gta cac tca tag 219
 Phe Leu Pro Met Val Val His Ser
 65 70

<210> 78
 <211> 72
 <212> PRT
 <213> Homo sapiens

<400> 78
 Met Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 1 5 10 15

Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 20 25 30

Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 35 40 45

Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 50 55 60

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Phe Leu Pro Met Val Val His Ser
65 70

<210> 79
<211> 357
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(357)

<400> 79
atg acc tgc cag gct ctg ggt cag gac atg gtt tct ccg gaa gct acc 48
Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
1 5 10 15
aac tct tcc tct tcc tct ttc tct tcc ccg tct tcc gct ggt cgt cac 96
Asn Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
20 25 30
gtt cgt tct tac aac cac ctg cag ggt gac gtt cgt tgg cgt aaa ctg 144
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
35 40 45
ttc tct ttc acc aaa tac ttc ctg aaa atc gaa aaa aac ggt aaa gtt 192
Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
50 55 60
tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca 240
Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
65 70 75 80
tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat 288
Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
85 90 95
tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt 336
Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
100 105 110
aac aat gac tgt aag ctg aag 357
Asn Asn Asp Cys Lys Leu Lys
115

<210> 80
<211> 119
<212> PRT
<213> Homo sapiens

<400> 80
Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
1 5 10 15
Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
20 25 30
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
35 40 45

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Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110
 Asn Asn Asp Cys Lys Leu Lys
 115

<210> 81
 <211> 276
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(276)

<400> 81
 atg gct ggt cgt cac gtt cgt tct tac aac cac ctg cag ggt gac gtt 48
 Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1 5 10 15
 cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa atc gaa 96
 Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu
 20 25 30
 aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg tac agc 144
 Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser
 35 40 45
 atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc aaa gcc 192
 Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala
 50 55 60
 att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa ctc tat 240
 Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr
 65 70 75 80
 ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag 276
 Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys
 85 90

<210> 82
 <211> 92
 <212> PRT
 <213> Homo sapiens

<400> 82
 Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1 5 10 15
 Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu

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20	25	30
Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser		
35	40	45
Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala		
50	55	60
Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr		
65	70	75
Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys		
85	90	

<210> 83
 <211> 525
 <212> DNA
 <213> Homo sapiens

<400> 83
 atgacctctc aggcctctggg tcaggacatg gtttctccgg aagctaccaa ctcttcctct 60
 tcctctttct cttccccgctc ttccgctggg cgtaacgttc gttcttacia ccacctgcag 120
 ggtgacgttc gttggcgtaa actgttctct ttcaccaaact acttctgaa aatcgaaaaa 180
 aacggtaaaag tttctgggac caagaaggag aactctccgt acagcatcct ggagataaca 240
 tcagtagaaa tcggagttgt tgccgtcaaa gccattaaca gcaactatta cttagccatg 300
 aacaagaagg ggaaactcta tggctcaaaa gaatttaaca atgactgtaa gctgaaggag 360
 aggatagagg aaaatggata caatacctat gcatcattta actggcagca taatgggagg 420
 caaatgtatg tggcattgaa tggaaaagga gctccaagga gaggacagaa aacacgaagg 480
 aaaaacacct ctgctcactt tcttccaatg gtggtacact catag 525

<210> 84
 <211> 525
 <212> DNA
 <213> Homo sapiens

<400> 84
 atgacctgcc aggcctctggg tcaggacatg gtttctccgg aagctaccaa ctcttcctct 60
 tcctctttct cttccccgctc ttccgctggg cgtaacgttc gttcttacia ccacctgcag 120
 ggtgacgttc gttggcgtaa actgttctct ttcaccaaact acttctgaa aatcgaaaaa 180
 aacggtaaaag tttctgggac caagaaggag aactctccgt acagcatcct ggagataaca 240
 tcagtagaaa tcggagttgt tgccgtcaaa gccattaaca gcaactatta cttagccatg 300
 aacaagaagg ggaaactcta tggctcaaaa gaatttaaca atgactgtaa gctgaaggag 360
 aggatagagg aaaatggata caatacctat gcatcattta actggcagca taatgggagg 420
 caaatgtatg tggcattgaa tggaaaagga gctccaagga gaggacagaa aacacgaagg 480
 aaaaacacct ctgctcactt tcttccaatg gtggtacact catag 525

<210> 85
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 85
 ggacctcat gacctctcag gctctgggt

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<210> 86
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 86
aaggagaact ctccgtacag c 21

<210> 87
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 87
gctgtacggt ctgttctcct t 21

<210> 88
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 88
ggaccctcat gacctgccag gctctgggtc aggac 35

<210> 89
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 89
ctgccaagc ttattatgag tgtaccacca ttggaag 37

<210> 90
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 90
aaaggatcct gccaggctct gggtcaggac atg 33

<210> 91
<211> 32

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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 91

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 92

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 92

gggccaagc ttatgagtgt accaccat

28

<210> 93

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 93

ccggcggatc ccatatgtct tacaaccacc tgcagg

36

<210> 94

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 94

ccggcggtac cttattatga gtgtaccacc attgg

35

<210> 95

<211> 426

<212> DNA

<213> Homo sapiens

<400> 95

atgtcttaca accacctgca ggggtgacgtt cgttggcgta aactgttctc tttcaccaaa 60
 tacttcttga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
 tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
 agcaactatt acttagccat gaacaagaag gggaaactct atggctcaaa agaatttaac 240
 aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcattt 300
 aactggcagc ataatgggag gcaaattgtat gtggcattga atggaaaagg agctccaagg 360
 agaggacaga aaacacgaag gaaaaacacc tctgtctact ttcttccaat ggtggtacac 420
 tcataa 426

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<210> 96
 <211> 141
 <212> PRT
 <213> Homo sapiens

<400> 96
 Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
 1 5 10 15
 Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
 20 25 30
 Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
 35 40 45
 Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
 50 55 60
 Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65 70 75 80
 Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
 85 90 95
 Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
 100 105 110
 Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys
 115 120 125
 Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 130 135 140

<210> 97
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 97
 caaccacctg cagggtgacg

20

<210> 98
 <211> 78
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 98
 aacggtcgac aaatgtatgt ggcaactgaac ggtaaagggtg ctccacgtcg tggtcagaaa 60
 acccgtcgta aaaacacc 78

<210> 99

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<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 99
gggcccaagc ttaagagtgt accaccattg gcagaaagtg agcagaggtg tttttacgac 60
gggttttctg accacg 76

<210> 100
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 100
gccacatata tttgtcgacc gtt 23

<210> 101
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 101
gggcccaagc ttaagagtg 19

<210> 102
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 102
gccacatata tttgtcgacc gtt 23

<210> 103
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 103

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ctgcagggtg acgttcggtg gcgtaaactg ttctccttca ccaaatactt cctgaaaatc 60
gaaaaaaacg gtaaagtttc tggtagcaag 90

<210> 104
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 104
agctttaaca gcaacaacac cgatttcaac ggaggtgatt tccaggatgg agtacgggca 60
gttttctttc ttggtaccag aaactttacc 90

<210> 105
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 105
ggtgtgtgtg ctgttaaagc tatcaactcc aactactacc tggctatgaa caagaaagg 60
aaactgtacg gttccaaaga atttaacaac 90

<210> 106
<211> 100
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 106
gtcgaccgtt gtgctgccag ttgaaggaag cgtaggtgtt gtaaccgttt tcttcgatac 60
gttctttcag ttacagtcg ttgttaaatt ctttggaaac 100

<210> 107
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 107
gcggcgtcga ccgttgtgct gccag 25

<210> 108
<211> 26
<212> DNA

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 108

gcggcctgca ggggtgacgtt cgttgg

26

<210> 109

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 109

ccggcggatc ccatatgtct tacaaccacc tgcagg

36

<210> 110

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 110

cgcgcgatat cttattaaga gtgtaccacc attg

34

<210> 111

<211> 426

<212> DNA

<213> Homo sapiens

<400> 111

atgtcttaca	accacctgca	gggtgacgtt	cgttggcgta	aactgttctc	cttcaccaa	60
tacttcctga	aaatcgaaaa	aaacggtaaa	gtttctggta	ccaagaaaga	aaactgccc	120
tactccatcc	tggaatcac	ctccgttgaa	atcggtgttg	ttgctgttaa	agctatcaac	180
tccaactact	acctggctat	gaacaagaaa	ggtaaaactgt	acggttccaa	agaatttaac	240
aacgactgta	aactgaaaga	acgtatcgaa	gaaaacgggt	acaacaccta	cgcttccttc	300
aactggcagc	acaacggtcg	acaaatgtat	gtggcactga	acggtaaagg	tgctccacgt	360
cgtggtcaga	aaaccgctcg	taaaaacacc	tctgctcact	ttctgccaat	ggtggtacac	420
tcttaa						426

<210> 112

<211> 141

<212> PRT

<213> Homo sapiens

<400> 112

Met	Ser	Tyr	Asn	His	Leu	Gln	Gly	Asp	Val	Arg	Trp	Arg	Lys	Leu	Phe
1				5					10					15	

Ser	Phe	Thr	Lys	Tyr	Phe	Leu	Lys	Ile	Glu	Lys	Asn	Gly	Lys	Val	Ser
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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	20		25		30
Gly Thr Lys	Lys Glu Asn Cys	Pro Tyr Ser	Ile Leu Glu	Ile Thr Ser	
35	40		45		
Val Glu Ile	Gly Val Val	Ala Val Lys	Ala Ile Asn	Ser Asn Tyr	Tyr
50	55		60		
Leu Ala Met	Asn Lys Lys	Gly Lys Leu	Tyr Gly Ser	Lys Glu Phe	Asn
65	70		75		80
Asn Asp Cys	Lys Leu Lys	Glu Arg Ile	Glu Glu Asn	Gly Tyr Asn	Thr
85		90		95	
Tyr Ala Ser	Phe Asn Trp	Gln His Asn	Gly Arg Gln	Met Tyr Val	Ala
100		105		110	
Leu Asn Gly	Lys Gly Ala	Pro Arg Arg	Gly Gln Lys	Thr Arg Arg	Lys
115		120		125	
Asn Thr Ser	Ala His Phe	Leu Pro Met	Val Val His	Ser	
130		135		140	

<210> 113

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 113

cgcgcccatg gctctgggtc aggacatg

28

<210> 114

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 114

gggcccaagc ttatgagtgt accaccat

28

<210> 115

<211> 516

<212> DNA

<213> Homo sapiens

<400> 115

atggctctgg	gtcaagatat	ggtttctccg	gaagctacca	actcttcctc	ttcctctttc	60
tcttccccgt	cttccgctgg	tcgtcacgtt	cgttcttaca	accacctgca	gggtgacgtt	120
cgttggcgta	aactgtttctc	tttcacaaaa	tacttcctga	aatcgaaaa	aaacggtaaa	180
gtttctggga	ccaagaagga	gaactgcccg	tacagcatcc	tgagataac	atcagtagaa	240
atcggagttg	ttgccgtcaa	agccattaac	agcaactatt	acttagccat	gaacaagaag	300
gggaaactct	atggctcaaa	agaatttaac	aatgactgta	agctgaagga	gaggatagag	360

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gaaaatggat acaataccta tgcattcattt aactggcagc ataatgggag gcaaattgtat 420
 gtggcattga atggaaaagg agctccaagg agaggacaga aaacacgaag gaaaaacacc 480
 tctgtcact ttcttccaat ggtgttacac tcataa 516

<210> 116
 <211> 171
 <212> PRT
 <213> Homo sapiens

<400> 116
 Met Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser
 1 5 10 15
 Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser
 20 25 30
 Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser Phe
 35 40 45
 Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr
 50 55 60
 Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu
 65 70 75 80
 Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala
 85 90 95
 Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp
 100 105 110
 Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala
 115 120 125
 Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn
 130 135 140
 Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr
 145 150 155 160
 Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 117
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 117
 gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 118
 <211> 75
 <212> DNA
 <213> Artificial Sequence

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<220>

<223> Description of Artificial Sequence: primer

<400> 118

ctgcccaagc ttttatgagt gtaccacccat tggaagaaag tgagcagagg tgtttttttc 60
 tcgtgttttc tgtcc 75

<210> 119

<211> 426

<212> DNA

<213> Homo sapiens

<400> 119

atgtcttaca accacctgca ggggtgacgtt cgttggcgta aactgtttctc tttcaccaaa 60
 tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
 tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
 agcaactatt acttagccat gaacaagaag gggaaactct atggctcaaa agaatttaac 240
 aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcatacttt 300
 aactggcagc ataatgggag gcaaattgtat gtggcattga atggaaaagg agctccaagg 360
 agaggacaga aaacacgaga aaaaaacacc tctgtctact ttcttccaat ggtggtacac 420
 tcatag 426

<210> 120

<211> 141

<212> PRT

<213> Homo sapiens

<400> 120

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
 1 5 10 15
 Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
 20 25 30
 Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
 35 40 45
 Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
 50 55 60
 Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65 70 75 80
 Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
 85 90 95
 Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
 100 105 110
 Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Glu Lys
 115 120 125
 Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 130 135 140

<210> 121

<211> 32

<212> DNA

<213> Artificial Sequence

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<220>

<223> Description of Artificial Sequence: primer

<400> 121

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 122

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 122

ctgcccgaagc ttttatgagt gtaccacccat tggaagaaa tgagcagagg tgtttttctg 60
tcgtgttttc tgtcc 75

<210> 123

<211> 426

<212> DNA

<213> Homo sapiens

<400> 123

atgtcttaca accacctgca ggggtgacgtt cggtggcgta aactgttctc tttcaccaaa 60
tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
agcaactatt acttagccat gaacaagaag gggaaactct atggctcaaa agaatttaac 240
aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcatcattt 300
aactggcagc ataatgggag gcaaattgtat gtggcattga atggaaaagg agtccaagg 360
agaggacaga aaacacgaca gaaaaacacc tctgctcact ttcttccaat ggtggtacac 420
tcatag 426

<210> 124

<211> 141

<212> PRT

<213> Homo sapiens

<400> 124

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
1 5 10 15Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
20 25 30Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
35 40 45Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
50 55 60Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
65 70 75 80Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
85 90 95Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
100 105 110

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Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Gln Lys
115 120 125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
130 135 140

<210> 125
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 125
gcggcacatg tcttacaacc acctgcaggg tg 32

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<210> 126
<211> 84
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: primer

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<400> 126
ctgcccgaagc ttttatgagt gtaccacat tggagaag tgagcagagg tgtttttcct 60
tcgtgtttcc tgtcctctcc ttgg                                     84
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<210> 127
<211> 426
<212> DNA
<213> Homo sapiens
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<400> 127						
atgtcttaca	accacctgca	gggtgacgtt	cgttggcgta	aactgtttctc	tttcacaaaa	60
tacttctctga	aaatcgaaaa	aaacggtaaa	gtttctggga	ccaagaagga	gaactgcccg	120
tacagcatcc	tggagataac	atcagtagaa	atcggagtgt	ttgccgtcaa	agccattaac	180
agcaactatt	acttagccat	gaacaagaag	gggaactct	atggctcaa	agaatttaac	240
aatgactgta	agctgaagga	gaggatagag	gaaaatggat	acaataccta	tgcattcattt	300
aactggcagc	ataatgggag	gcaaatgtat	gtggcattga	atggaaaagg	agctccaagg	360
agaggacagg	aaacacgaag	gaaaaacacc	tctgctcact	ttctccaat	ggtggtacac	420
tcataag						426

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<210> 128
<211> 141
<212> PRT
<213> Homo sapiens
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<400> 128
Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
1 5 10 15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
20 25 30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
35 40 45

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Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
 50 55 60

Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65 70 75 80

Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
 85 90 95

Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
 100 105 110

Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Glu Thr Arg Arg Lys
 115 120 125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 130 135 140

<210> 129
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 129
 gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 130
 <211> 84
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 130
 ctgcccaagc ttttatgagt gtaccacat tggaagaaag tgagcagagg tgtttttcct 60
 tcgtgtctgc tgtcctctcc ttgg 84

<210> 131
 <211> 426
 <212> DNA
 <213> Homo sapiens

<400> 131
 atgtcttaca accacctgca ggggtgacgtt cggtggcgta aactgttctc tttcaccaaa 60
 tacttctctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
 tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
 agcaactatt acttagccat gaacaagaag gggaaactct atggctcaa agaatttaac 240
 aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
 aactggcagc ataatgggag gcaaattgtat gtggcattga atggaaaagg agtccaagg 360
 agaggacagc agacacgaag gaaaaacacc tctgtctact ttcttccaat ggtggtacac 420
 tcatag 426

<210> 132
 <211> 141

-53-

<212> PRT

<213> Homo sapiens

<400> 132

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
 1 5 10 15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
 20 25 30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
 35 40 45

Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
 50 55 60

Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65 70 75 80

Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
 85 90 95

Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
 100 105 110

Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Gln Thr Arg Arg Lys
 115 120 125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 130 135 140

<210> 133

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 133

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 134

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 134

ctgccaagc ttttatgagt gtaccacat tggaagaaag tgagcagagg tgtttttcc 60
 tcgtgttttc tgtccttccc ttggagctcc ttt 93

<210> 135

<211> 426

<212> DNA

<213> Homo sapiens

-54-

<400> 135
 atgtcttaca accacctgca ggggtgacgtt cgttggcgta aactgttctc tttcaccaaa 60
 tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgccc 120
 tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
 agcaactatt acttagccat gaacaagaag gggaaactct atggctcaa agaatttaac 240
 aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
 aactggcagc ataatgggag gcaaatgtat gtggcattga atggaaaagg agctccaagg 360
 gaaggacaga aaacacgaag gaaaaacacc tctgtctcact ttcttccaat ggtggtacac 420
 tcatag 426

<210> 136
 <211> 140
 <212> PRT
 <213> Homo sapiens

<400> 136
 Met Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser
 1 5 10 15
 Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly
 20 25 30
 Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val
 35 40 45
 Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu
 50 55 60
 Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn
 65 70 75 80
 Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr
 85 90 95
 Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu
 100 105 110
 Asn Gly Lys Gly Ala Pro Arg Glu Gly Gln Lys Thr Arg Arg Lys Asn
 115 120 125
 Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 130 135 140

<210> 137
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 137
 gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 138
 <211> 93
 <212> DNA
 <213> Artificial Sequence

-55-

<220>

<223> Description of Artificial Sequence: primer

<400> 138

ctgccaagc ttttatgagt gtaccacat tggaagaaag tgagcagagg tgtttttcct 60
 tcgtgttttc tgtccctgcc ttggagctcc ttt 93

<210> 139

<211> 426

<212> DNA

<213> Homo sapiens

<400> 139

atgtcttaca accacctgca gggtagcgtt cgttggcgta aactgttctc tttcaccaaa 60
 tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgccc 120
 tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
 agcaactatt acttagccat gaacaagaag gggaaactct atggctcaaa agaatttaac 240
 aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
 aactggcagc ataatgggag gcaaatgtat gtggcattga atggaaaagg agctccaagg 360
 cagggacaga aaacacgaag gaaaaacacc tctgctcact ttcttccaat ggtggtacac 420
 tcatag 426

<210> 140

<211> 141

<212> PRT

<213> Homo sapiens

<400> 140

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
 1 5 10 15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
 20 25 30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
 35 40 45

Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
 50 55 60

Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65 70 75 80

Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
 85 90 95

Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
 100 105 110

Leu Asn Gly Lys Gly Ala Pro Arg Gln Gly Gln Lys Thr Arg Arg Lys
 115 120 125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 130 135 140

<210> 141

<211> 32

<212> DNA

<213> Artificial Sequence

-56-

<220>

<223> Description of Artificial Sequence: primer

<400> 141

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 142

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 142

ttgaatggag aaggagctcc a

21

<210> 143

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 143

tggagctcct tctccattca a

21

<210> 144

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 144

ctgcccaagc ttttatgagt gtaccacat tgg

33

<210> 145

<211> 426

<212> DNA

<213> Homo sapiens

<400> 145

atgtctttaca accacctgca ggggtgacgtt cgttggcgta aactgttctc tttcaccaaa 60
 tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
 tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
 agcaactatt acttagccat gaacaagaag gggaaactct atgggtcaaa agaatttaac 240
 aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
 aactggcagc ataatgggag gcaaattgtat gtggcattga atggagaagg agctccaagg 360
 agaggacaga aaacacgaag gaaaaacacc tctgctcact ttcttccaat ggtggtacac 420
 tcatag 426

<210> 146

<211> 141

<212> PRT

-57-

<213> Homo sapiens

<400> 146

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Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
 1           5           10           15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
          20           25           30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
          35           40           45

Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
          50           55           60

Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
          65           70           75           80

Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
          85           90           95

Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
          100          105          110

Leu Asn Gly Glu Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys
          115          120          125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
          130          135          140

```

<210> 147

<211> 3974

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pHE4-5 vector

<400> 147

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ggtacctaag tgagtagggc gtccgatcga cggacgcctt. ttttttgaat tcgtaatcat 60
ggtcatagct gtttcctgtg tgaaattggt atccgctcac aattccacac aacatacagag 120
ccggaagcat aaagtgtaaa gcctgggggtg cctaagtagt gagctaactc acattaattg 180
cgttgcgctc actgcccgtt ttccagtcgg gaaacctgtc gtgccagctg cattaatgaa 240
tcggccaacg cgcggggaga ggcggtttgc gtattgggcg ctcttccgct tcctcgctca 300
ctgactcgct gcgctcggtc gttcggctgc ggcgagcggt atcagctcac tcaaaggcgg 360
taatacgggt atccacagaa tcaggggata acgcaggaaa gaacatgtga gcaaaaggcc 420
agcaaaaggc caggaaccgt aaaaaggccg cgttgctggc gtttttccat aggtccgccc 480
cccctgacga gcatcacaaa aatcgacgct caagtcagag gtggcgaaac ccgacaggac 540
tataaagata ccaggcgttt cccctggaa gctccctcgt gcgctctcct gttccgaccc 600
tgccgcttac cggtacactg tccgcctttc tcccttcggg aagcgtggcg ctttctcata 660
gtcacgctg taggtatctc agttcggtgt aggtcggtcg ctccaagctg ggctgtgtgc 720
acgaaccccc cgttcagccc gaccgctgcg ccttatccg taactatcgt cttgagtcca 780
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caattcgcg cggaaggcga agcggcatgc atttacgttg acaccatcga atgggtgcaa 1200
acctttcgcg gtatggcatg atagcgcccg gaagagagtc aattcagggt ggtgaatgtg 1260
aaaccagtaa cgttatacga tgtcgagag tatgcccgtg tctcttatca gaccgtttcc 1320

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-58-

```

cgcgtggtga accaggccag ccacgtttct gcgaaaacgc gggaaaaagt ggaagcggcg 1380
atggcggaagc tgaattacat tcccaaccgc gtggcacaac aactggcggg caaacagtcg 1440
ttgctgattg gcgttgccac ctccagtcg gccctgcacg cgccgtcgca aattgtcgcg 1500
gcgattaaat ctgcgcccga tcaactgggt gccagcgtgg tgggtgcgat ggtagaacga 1560
agcggcgtcg aagcctgtaa agcggcgggt cacaatcttc tcgcgcaacg cgtcagtggt 1620
ctgatcatta actatccgct ggatgaccag gatgccattg ctgtggaagc tgcctgcact 1680
aatgttccgg cgttatttct tgatgtctct gaccagacac ccatcaacag tattatttct 1740
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atcgcgctgt tagcgggccc attaagttct gtctcggcgc gtctgcgtct ggctggctgg 1860
cataaatatc tactcgcaa tcaaatcag ccgatagcgg aacgggaagg cgactggagt 1920
gccatgtccg gttttcaaca aaccatgcaa atgtggaatg agggcatcgt tcccatgcg 1980
atgctggttg ccaacgatca gatggcgctg ggcgcaatgc gcgccattac cgagtcgggg 2040
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gaccgcttgc tgcaactctc tcagggccag gcggtgaagg gcaatcagct gttgcccgct 2220
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gacggatttg cactgccggt agaactccgc gaggtcgctc agcctcaggc agcagctgaa 2520
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ggcggcggtg gaatcgaat ctctgatgg caggttgggc gtcgcttggg cggtcatttc 2700
gaacccaga gtcccgtca gaagaactcg tcaagaaggc gatagaaggc gatcgctgcg 2760
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cggccacagt cgatgaatcc agaaaagcgg ccattttcca ccatgatatt cggcaagcag 2940
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aacagttcgg ctggcgcgag cccctgatgc tcttcgtcca gatcatcctg atcgacaaga 3060
ccggtctcca tccgagtag tgctcgctcg atgcgatgtt tcgcttgggt gtcgaatggg 3120
caggtagccg gatcaagcgt atgcagccgc cgcattgcat cagccatgat ggatacttct 3180
tcggcaggag caaggtgaga tgacaggaga tctgccccg gcacttcgcc caatagcagc 3240
cagtcctctc ccgcttcagt gacaacgtcg agcacagctg cgcaaggaaac gcccgtcgtg 3300
gccagccacg atagccgcgc tgctcgtcc tgcagttcac tcagggcacc ggacaggtcg 3360
gtcttgacaa aaagaaccgg gcgcccctg gctgacagcg ggaacacggc ggcatcagag 3420
cagccgattg tctgttgtc ccagtcatag ccgaatagcc tctccacca agcggcggga 3480
gaacctgcgt gcaatccatc ttgttcaatc atgcgaaacg atcctcatcc tgtctcttga 3540
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ttgcagggtc tcccaacctt accagagggc gccccagctg gcaattccgg ttcgcttgct 3660
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ctctttgcgc ctgtgcttcc cctgtccag atagcccagt agctgacatt catccgggtt 3780
cagcacggtt tctgcggact ggctttctac gtgttccgct tcttttagca gcccttgcg 3840
cctgagtgct tgccgcagcg tgaagcttaa aaaactgcaa aaaatagttt gacttgtag 3900
cggataacaa ttaagatgta cccaattgtg agcggataac aatttcacac attaaagag 3960
agaaattaca tatg 3974

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<210> 148

<211> 112

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pHE4-5 promoter sequence

<400> 148

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aagcttaaaa aactgcaaaa aatagtttga cttgtgagcg gataacaatt aagatgtacc 60
caattgtgag cgataacaa tttcacacat taaagaggag aaattacata tg 112

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<210> 149

-59-

<211> 106
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 149

gagcgcggat ccgccacat gaaggtctcc gtggctgccc tctcctgcct catgcttggt 60
actgcccttg gatctcaggc cagctacaat caccttcaag gagatg 106

<210> 150
<211> 36
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 150

gagcgcggat ccctatgagt gtaccacat tggaag 36

<210> 151
<211> 32
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 151

ccggccatat gcgtaaactg ttctctttca cc 32

<210> 152
<211> 35
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 152

ccggcggtag cttattatga gtgtaccacc attgg 35

<210> 153
<211> 32
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 153

gatcgccata tggctggtcg tcacgttcgt tc 32

<210> 154
<211> 39

-60-

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 154
gatcgcggtta ccttattatg agtgtaccac cattggaag 39

<210> 155
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 155
gatcgccata tggctggtcg tcacgttcgt tc 32

<210> 156
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 156
gatcgcggtta ccttattatg agtgtaccac cattggaag 39

<210> 157
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 157
gatcgccata tggctggtcg tcacgttcgt tc 32

<210> 158
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 158
gatcgcggtta ccttattatg agtgtaccac cattggaag 39

<210> 159
<211> 32
<212> DNA
<213> Artificial Sequence

-61-

<220>

<223> Description of Artificial Sequence: primer

<400> 159

gatcgccata tggtggtcg tcacgttcgt tc

32

<210> 160

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 160

gatcgcggtta ccttattatg agtgtaccac cattggaag

39

<210> 161

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 161

gatcgcggtat ccgccaccat gtggaaatgg atactgacac attgtgc

47

<210> 162

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 162

gatcgctcta gattatgagt gtaccaccat tggaagaaag

40

<210> 163

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 163

gatcgcggtat ccgccaccat gtggaaatgg atactgacac attgtgc

47

<210> 164

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

-62-

<400> 164
gatcgctcta gattatgagt gtaccacat tggaagaaag 40

<210> 165
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 165
gatcgcgat ccgccacat gtggaaatgg atactgacac attgtgc 47

<210> 166
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 166
gatcgctcta gattatgagt gtaccacat tggaagaaag 40

<210> 167
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 167
gatcgcgat ccgccacat gtggaaatgg atactgacac attgtgc 47

<210> 168
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 168
gatcgctcta gattatgagt gtaccacat tggaagaaag 40

<210> 169
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 169
gatcgccata tggctggtcg tcacgttcgt tc. 32

-63-

<210> 170
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 170
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<210> 171
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 171
 gatcgccata tggctggtcg tcacgttcgt tc. 32

<210> 172
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 172
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<210> 173
 <211> 456
 <212> DNA
 <213> Escherichia coli

<400> 173
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 aaactgttct ctttcaccaa atacttcctg aaaatcgaaa aaaacggtaa agtttctggg 120
 accaagaagg agaactgcc gtacagcatc ctggagataa catcagtaga aatcggagtt 180
 gttgccgtca aagccattaa cagcaactat tacttagcca tgaacaagaa ggggaaactc 240
 tatggctcaa aagaatttaa caatgactgt aagctgaagg agaggataga ggaaaatgga 300
 tacaatacct atgcatcatt taactggcag cataatggga ggcaaagtga tgtggcattg 360
 aatggaaaag gagctccaag gagaggacag aaaacacgaa ggaaaaacac ctctgctcac 420
 tttcttccaa tgggtgtaca ctcataataa ggtacc 456

<210> 174
 <211> 48
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 174

-64-

gactacatat ggctggtcgt cacgttcggt cttacaacca cctgcagg

48

<210> 175

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 175

ctagtctcta gattattatg agtggtacaac catcggcagg aagtgag

47

<210> 176

<211> 447

<212> DNA

<213> Escherichia coli

<400> 176

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ctgttctctt	tcaccaaata	cttctgaaa	atcgaaaaga	acggtaaaag	ttctggtacc	120
aagaaagaaa	actgcccgtg	ctctatcctg	gaaatcacct	ccgttgaaat	cggtgttgta	180
gccgttaaag	ccatcaactc	caactattac	ctggccatga	acaaaaaggg	taaactgtac	240
ggctctaaag	aattcaacaa	cgactgcaaa	ctgaaagaac	gtatcgaaga	gaacggttac	300
aacacctacg	catccttcaa	ctggcagcac	aacggtcgtc	agatgtacgt	tgactgaac	360
ggtaaaggcg	ctccgcgtcg	cggtcagaaa	acccgtcgca	aaaacacctc	tgctcacttc	420
ctgccgatgg	ttgtacactc	ataataa				447

Applicant's or agent's file reference number	1488.036PC0K	International application No. PCT/US00/18328
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
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Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 03 July 2000	Accession Number PTA-2183
C. ADDITIONAL INDICATIONS (leave blank if not applicable)	
This information is continued on an additional sheet <input type="checkbox"/>	
(DNA Plasmid (Human): pHE4.KGF-2.A63-S208)	
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Applicant's or agent's file reference number	1488.036PC0K	International application No. PCT/US00/18328
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(DNA Plasmid DNA Plasmid (Human): pHE4.KGF-2.A63-S208) Page 2 of 4

AUSTRALIA

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CANADA

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DENMARK

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FINLAND

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ICELAND

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NETHERLANDS

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NORWAY

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SWEDEN

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(DNA Plasmid DNA Plasmid (Human): pHE4.KGF-2.A63-S208) Page 4 of 4

UNITED KINGDOM

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Applicant's or agent's file reference number	1488.036PC0K	International application No. PCT/US00/18328
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Page 3 of 4

NETHERLANDS

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(DNA Plasmid (Human): pHE4.KGF-2.A63-S208c.o.)***Page 4 of 4*****UNITED KINGDOM**

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Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)	
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(DNA Plasmid (TO BE ADVISED))**Page 2 of 4****AUSTRALIA**

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UNITED KINGDOM

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ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

*(DNA Plasmid (TO BE ADVISED))**Page 3 of 4***NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

The applicant hereby requests that, until the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Norwegian Patent office or any person approved by the applicant in the individual case.

SINGAPORE

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SWEDEN

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(DNA Plasmid (TO BE ADVISED))

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>151</u> , line <u>18</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit January 9, 1998	Accession Number 209575
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid pHEKGF-2delta33 In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

The applicant hereby requests that, until either a Canadian patent has been issued on the basis of the application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the furnishing of a sample of deposited biological material referred to in the application only be effected to an independent expert nominated by the Commissioner of Patents.

DENMARK

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FINLAND

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ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

*(DNA Plasmid pHEKGF-2delta33)**Page 3 of 4***NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

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SINGAPORE

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SWEDEN

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(DNA Plasmid pHEKGF-2delta33)

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>399</u> , line <u>19</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit June 30, 1999	Accession Number PTA-289
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid pVGI-0:Δ33 KGF2 (Ref. PF155) In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

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DENMARK

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FINLAND

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ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

NETHERLANDS

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NORWAY

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SINGAPORE

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SWEDEN

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(DNA Plasmid pVGI-0:Δ33 KGF2 (Ref. PF155))

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>399</u> , line <u>11</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit June 30, 1999	Accession Number PTA-290
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid pVGI-0: KGF2 (F.L.) (Ref. PF155) In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

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CANADA

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DENMARK

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FINLAND

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ICELAND

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NORWAY

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SINGAPORE

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SWEDEN

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(DNA Plasmid pVGI-0: KGF2 (F.F.) (Ref. PF155))

Page 4 of 4

UNITED KINGDOM

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Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>20</u> , line <u>21</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit September 29, 1994	Accession Number 75901
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid, 366,885 In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (If the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

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CANADA

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DENMARK

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FINLAND

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NETHERLANDS

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NORWAY

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(DNA Plasmid 366,885)

Page 4 of 4

UNITED KINGDOM

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Applicant's or agent's file reference number	1488.036PCOK	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>4</u> , line <u>11</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit December 16, 1994	Accession Number 75977
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid, 366885A In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

The applicant hereby requests that, until either a Canadian patent has been issued on the basis of the application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the furnishing of a sample of deposited biological material referred to in the application only be effected to an independent expert nominated by the Commissioner of Patents.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent office or any person approved by the applicant in the individual case.

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Registration), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the National Board of Patents and Registration or any person approved by the applicant in the individual case.

ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

The applicant hereby requests that, until the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Norwegian Patent office or any person approved by the applicant in the individual case.

SINGAPORE

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent office or any person approved by the applicant in the individual case.

(DNA Plasmid 366885A)

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/18328**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) :Please See Extra Sheet

US CL :Please See Extra Sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 530/350, 399; 536/23.1, 23.5; 435/69.4, 71.1, 71.2, 325, 471, 252.3, 254.11, 320.1; 514/2, 8, 12, 866, 885, 893

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Extra Sheet.**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim
A	WO 98/16642 A1 (AMGEN INC.) 23 April 1998 (23/04/98), see entire document.	1-12
A	WO 98/16243 A1 (AMGEN INC.) 23 April 1998 (23/04/98), see entire document.	1-12



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or prior date and not in conflict with the application but cited to understate the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
B earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

06 SEPTEMBER 2000

Date of mailing of the international search report

10 OCT 2000

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

PREMA MERTZ

Telephone No. (703) 308-0196

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/18328

A. CLASSIFICATION OF SUBJECT MATTER:

IPC (7):

C07K 14/47, 14/475; C12N 5/10, 15/12, 15/16, 15/63, 15/64; A61K 38/16, 38/17, 38/18

A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

530/350, 399; 536/23.1, 23.5; 435/69.4, 71.1, 71.2, 325, 471, 252.3, 254.11, 320.1; 514/2, 8, 12, 866, 885, 893

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

WEST, CAS ONLINE, MEDLINE, CAPLUS

search terms: keratinocyte growth factor-2, fibroblast growth factor-12, mutcin, mutant, recombinant, method, administer, therapy, treatment.